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An Arrangement for Introducing Forces into a Luggage Stowage Compartment and Distributing said Forces

The invention relates to an arrangement for introducing forces into a luggage stowage compartment and for transmitting and/or distributing the forces, or tensions, respectively, in vehicles, in particular in fast-traveling vehicles, such as aircraft, ground vehicles and watercraft, e.g. express trains, speedboats and the like.

Primarily, the invention relates to luggage stowage compartments of an aircraft, but also of other vehicles subjected to great changes in speed, by which the objects accommodated in the luggage stowage areas may become damaged.

So far, containers made of plate-shaped elements and serving as luggage stowage compartments have been provided with complex metallic force introduction elements, which have been fastened to reinforced parts of the wall structure of the container by gluing techniques or by means of screws or rivets. This technique has been heavy and complex.

Such overhead luggage stowage compartments for

aircraft have been described by EP 514 957 A1 and by EP 718 189 A1, e.g.

The object of the invention consists in avoiding this disadvantage and in finding measures for a weight-saving solution. The arrangement shall be as simple and cost-effective as possible to produce.

According to the invention, this object is achieved in that the introduction and distribution of the forces to the luggage stowage compartment is effected via a ceiling-side connecting element which distributes the forces or tensions. The present invention provides an arrangement for introducing forces into a luggage stowage compartment, which arrangement can be produced with little expenditures in terms of work and costs. The connecting element serves for accommodating and/or damping and/or distributing the shearing and/or tensile and/or pressure forces and tensions, respectively. The ceiling-side connecting element thus relieves the ceiling wall and the side walls of the luggage stowage compartment.

There, the introduction of force preferably is effected directly into an extension of at least one end-side side wall of the luggage stowage compartment.

Thus, the connecting element for transmitting the forces is integrated in the side wall of the luggage stowage compartment.

Preferably, the extension is formed by an upwardly projecting bracket.

On the extension of the side wall of the luggage stowage compartment, a force-introducing element, e.g. a bushing, a lug or the like, may be provided.

The said connecting element may be designed as a ledge, wall or the like which is fastened to the luggage stowage compartment at at least two spots thereof so as to be unshiftable in the longitudinal direction thereof.

The connecting element has a reinforcing cross-section, e.g. an L-shaped cross-section. Yet also other cross-sections are possible, e.g. in the form of an I, Z, T, J or the like.

Preferably, the connecting element is glued to the luggage stowage compartment.

Preferably, the connecting element is integrated in the luggage stowage compartment.

According to a further feature of the invention, the connecting element is connected to the force-intro-

ducing element, preferably at least on one of its ends.

Furthermore, a bottom carrier may be provided on the bottom side of the luggage stowage compartment for receiving forces and their uniform distribution to the luggage stowage compartment.

Preferably, the connecting element is made of a fiber-reinforced synthetic material, in particular of a fiber-glass or carbon fiber-reinforced synthetic material.

Further features of the invention will be explained in more detail by way of the drawings in which an exemplary embodiment of a luggage stowage compartment is illustrated.

Therein,

Fig. 1 shows a perspective view of a luggage stowage compartment, seen from the front-side;

Fig. 2 shows a luggage stowage compartment according to Fig. 1, seen from the rear side;

Fig. 2A shows a perspective view of the luggage stowage compartment according to Fig. 1, seen from below;

Fig. 3 shows the luggage stowage compartment according to Fig. 1, seen from above;

Fig. 4 shows a section through the luggage stowage compartment according to Fig. 3, along section line IV-IV;

Fig. 5 shows a section through the luggage stowage compartment according to Fig. 3, along section line V-V;

Fig. 6 shows detail D of Fig. 5, on an enlarged scale;

Fig. 7 shows a detailed view of the luggage stowage compartment in the region of the bottom ledge on an enlarged scale; and

Fig. 8 shows detail B of Fig. 4, on an enlarged scale.

The luggage stowage compartment 1 illustrated in Figs. 1 to 8 comprises a pivot flap 2 capable of being opened for insertion and removal of hand luggage etc., one side wall 3 each to provide for a lateral closure of the luggage stowage compartment 1, one ceiling wall 4 and one downwardly stepped rear wall 5 which is followed by a horizontal fastening ledge 6.

The side walls 3 are provided with an upwardly projecting shoulder 7 which, together with the corresponding shoulder 7 of the oppositely located side wall

3, forms an upwardly projecting bracket 11 of, e.g., trapezoidal cross-section, to which in the present case a ledge 8 of L-shaped cross-section is fastened, preferably glued over its entire length, a horizontal leg of the ledge 8 resting on the substantially horizontal surface of the projection while the leg, which projects at a right angle, covers the consecutively arranged perpendicular wall 13 that faces the pivot flap 2.

The connecting element, in the present case the ledge 8, irrespective of the shape in which it is designed, can be made of fiber glass or carbon fiber, yet it may also be provided with other fiber-reinforced synthetic materials, metals, composite materials etc.

To introduce forces into the luggage stowage compartment 1, one of the projections 7 is provided with a bushing 7', a lug or the like. Of course, also a different equipment may be provided for the introduction of forces.

At the bottom 9 of the luggage stowage compartment 1, a bottom carrier 10, ledge or the like is fastened in parallel with the ledge 8, for instance also by gluing over the entire length of the luggage stowage compartment 1, which bottom carrier 10 has the same or a

similar function as the ledge 8.

By a rapid acceleration or braking of the vehicle, in the present case of the aircraft during takeoff or during landing thereof, forces are created in the luggage stowage compartment 1 which are indicated by the arrows P in Figs. 1 and 2 and which are distributed by the ledge 8 or the like, or by the bottom carrier 10 or the like, respectively, on the luggage stowage compartment 1 so that the structural integrity of the luggage stowage compartment 1 will remain ensured in case of an increased load. In any type of luggage stowage compartment 1, e.g. in bins for storing food, dishes, cutlery and other things, the same effect will be achieved, irrespective of the purpose for which such compartment is intended.

Within the scope of the invention, the luggage stowage compartment 1 may be constructed in various ways, e.g. open at its bottom, and closeable by a chute.

Adapted to the respective conditions, the measures according to the invention are also applicable in express trains, speedboats and other vehicles in which high differences in speed will occur.